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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/826,901	04/06/2001	Helmut Jakusch	P20740	6402

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EXAMINER	
AHMED, SHEEBA	

ART UNIT	PAPER NUMBER
1773	10

DATE MAILED: 01/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/826,901	Applicant(s) JAKUSCH ET AL.	
	Examiner Sheeba Ahmed	Art Unit 1773	

-- The MAILING DATE f this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) *17,20,24 and 25* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-5,8-16,18,19,21,22,26 and 28* is/are rejected.

7)☐ Claim(s) *6,7,23,27 and 29* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *9*.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Response to Amendment

1. Claims 22-29 have been added in the above-identified application. Claims 1-29 are now pending and subject to a restriction requirement as set forth in Paper No. 5 and 7. Claims 17, 20, 24, and 25 are withdrawn from consideration subject to the above mentioned restriction requirement. **Claims 1-16, 18, 19, 21-23, and 26-29 are now under consideration.**

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on October 30, 2003 (Paper No. 9) is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement has been considered by the examiner and an initialed Form PTO-1449 is attached.

Claim Objections

3. Claims 23, 27, and 29 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Claims 23, 27, and 29 are dependent on claims 22, 26, and 28, respectively, and simply recite the limitations already stated in claims 22, 26, and 28, respectively. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-3, 5, 12, 15, 18, 19, 21, 22, 26, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Munch et al. (US 5,641,355) in view of Inoue et al. (US 5,989,703).

Munch et al. disclose a process for making a magnetic recording medium having a nonmagnetic substrate and at least one magnetic applied thereon (Column 1, lines 5-8). The process can be used to make a double-layer magnetic tape having two magnetic layers (Column 4, lines 60-68). Example 4 illustrates an arrangement having two magnetic layers. The lower layer comprises acicular chromium oxide having an H_c of 37 kA/m, carbon black and a polyurethane binder and the upper layer comprise magnetizable metal powder having an H_c of 133kA/m and a polyurethane binder. The upper layer has a thickness of 0.2 microns and the lower layer has a thickness of 1.5 microns (Column 5, lines 61-63).

Munch et al. do not teach that the lower layer comprises an isotropic magnetically soft pigment, which is selected from γ-Fe_2O_3, Fe_3O_4, or a solid solution of these components, and has a mean crystallite size of less than 10 nm (or 6nm as recited in claim 5).

However, Inoue et al. disclose a process to make γ-Fe_2O_3 having a small crystallite size *(i.e., less than 30 nm and hence overlapping with the instantly claimed range)* and magnetism and use of such particles in a magnetic recording medium comprising a nonmagnetic substrate coated with a magnetic layer. The use of such an iron oxide magnetic powder allows the

viscosity of the coating to be lowered, provides excellent coating characteristics, excellent surface characteristics and satisfactory electromagnetic conversion characteristics (Column 2, lines 1-6, 22-25, and 55-68).

Accordingly, it would have been obvious to one having ordinary skill in the art to replace the acicular chromium oxide in the lower layer of the magnetic recording medium taught by Munch et al. with a γ-Fe_2O_3 having a small crystallite size (i.e., less than 30 nm) given that Inoue et al. specifically teach that use of such particles in the lower layer of a magnetic recording medium allows the viscosity of the magnetic coating to be lowered, provides excellent coating characteristics, excellent surface characteristics and satisfactory electromagnetic conversion characteristics (Column 2, lines 1-6, 22-25, and 55-68).

5. Claims 4, 8-11, 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Munch et al. (US 5,641,355) in view of Inoue et al. (US 5,989,703) and Yamazaki et al. (US 5,714,275).

Munch et al. disclose a process for making a magnetic recording medium having a nonmagnetic substrate and at least one magnetic applied thereon (Column 1, lines 5-8). The process can be used to make a double-layer magnetic tape having two magnetic layers (Column 4, lines 60-68). Example 4 illustrates an arrangement having two magnetic layers. The lower layer comprises acicular chromium oxide having an H_c of 37 kA/m, carbon black and a polyurethane binder and the upper layer comprise magnetizable metal powder having an H_c of 133kA/m and a polyurethane binder. The upper layer has a thickness of 0.2 microns and the lower layer has a thickness of 1.5 microns (Column 5, lines 61-63). On the other hand, Inoue et

al. disclose a process to make γ-Fe_2O_3 having a small crystallite size *(i.e., less than 30 nm and hence overlapping with the instantly claimed range)* and magnetism and use of such particles in a magnetic recording medium comprising a nonmagnetic substrate coated with a magnetic layer. The use of such an iron oxide magnetic powder allows the viscosity of the magnetic coating to be lowered, provides excellent coating characteristics, excellent surface characteristics and satisfactory electromagnetic conversion characteristics (Column 2, lines 1-6, 22-25, and 55-68).

Munch et al. and Inoue et al. do not teach that the magnetic pigment in the upper layer is a ferrite pigment, that the weight % of the magnetically soft pigment in the lower layer is within the range recited in claims 8 and 9 of the instant application, that the γ-Fe_2O_3 in the lower layer has been surface treated with an aluminum or silicon compound, that the nonmagnetic pigment in the lower layer meets the limitations recited in claim 13 and is a mixture of carbon black and α-Fe_2O_3.

Yamazaki et al. disclose a magnetic recording medium comprising a magnetic layer, a lower layer and an upper magnetic layer and shows excellent electromagnetic characteristics. The upper layer comprises ferrite particles (Column 3, lines 1-25) and the lower layer comprises γ-Fe_2O_3 which may be treated with a surface treating agent (Column 6, lines 10-22). The lower layer further comprises inorganic compounds such as α-iron oxide and the particle size of theses particles is 0.05 to 2 microns and the particle shape may be acicular, spherical, polyhedral, or hexagonal. The surfaces of the particles are treated with aluminum or silicone oxide and such a treatment results in a homogenous and dense surface layer (Column 7, lines 1-64). Carbon black may also be incorporated into the lower layer and is known to reduce the Rs effect.

Accordingly, it would have been obvious to one having ordinary skill in the art modify the magnetic recording medium taught by Munch et al. and Inoue et al. by using a ferrite magnetic pigment in the upper layer, by surface treating the γ-Fe_2O_3 in the lower layer with an aluminum or silicon compound, and by using a mixture of carbon black and α-Fe_2O_3 in the lower layer given that Yamazaki et al. specifically teach that the use of ferrite particle provides excellent electromagnetic characteristics, and surface treatment with an aluminum or silicone oxide results in a homogenous and dense surface layer and that the addition of carbon black is known to reduce the Rs effect. Furthermore, it would have been obvious to one having ordinary skill in the art to optimize the weight percentage of the magnetically soft pigment in the lower layer given that it is known that the amount of magnetization of a layer can be controlled by controlling the amount of magnetically soft pigment present in the layer.

Response to Arguments

6. Applicants traverse the rejection of claims 1-3, 5, 12, 15, 18, 19, and 21 under 35 U.S.C. 103(a) as being unpatentable over Munch et al. (US 5,641,355) in view of Inoue et al. (US 5,989,703) and argue that Inoue only discloses a crystallite size of less than 30nm and does not teach or suggest a crystallite size of less than 10nm and that the examples in Inoue are only directed to a crystallite size of 17 to 28. However, the Examiner maintains that Inoue does in fact teach the range claimed in the instant application. Moreover, the Applicants are reminded that the entire disclosure of a U.S. Patent having an earlier filing date can be relied upon to reject a claim and therefore there is no requirement that Inoue specifically disclose crystallite sizes less than 10 nm in an example.

Furthermore, the Examiner recognizes that Applicants can rebut a prima facie case of obviousness based on overlapping ranges by showing the criticality of the claimed range and hence the Examiner has reviewed the experimental data provided in the Specification of the instant application. However, the experimental data does not show that the particular range of crystallite size is critical or that the claimed range of crystallite size achieves unexpected results relative to the prior art range given that there are multiple variables that are manipulated to achieve improvements in the RF level. For example, Examples 1 and 2 use more than one type of magnetically soft pigment, examples 3 varies the amount of the lubricant to achieve improvements in the coefficient of friction and in example 4 half the magnetically soft pigment is replaced by a non-magnetic powder. Hence, it is unclear that the improvements in RF levels are in fact a result of the criticality of the claimed range of crystallite sizes.

Applicants further argue that there is no motivation to combine the Munch and Inoue references given that there is no motivation to modify the lower layer taught by Munch with the particles taught by Inoue. However, in response, the examiner would like to point out that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Inoue specifically teaches that the use of γ-Fe_2O_3 particles having a small crystallite size (i.e., less than 30 nm) in the lower layer of a magnetic recording medium allow the viscosity of the magnetic coating to be

lowered, provide excellent coating characteristics, excellent surface characteristics and satisfactory electromagnetic conversion characteristics.

Allowable Subject Matter

7. Claims 6 and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 6 and 7 recite a magnetic recording medium comprising a nonmagnetic substrate, an upper binder-containing magnetic recording layer containing a magnetic pigment having a coercive force of 100-250 kA/m and having a thickness of less than 0.5 microns and a lower binder-containing layer containing an isotropically magnetic soft pigment selected from γ-Fe_2O_3, Fe_3O_4 or a solid solution thereof, having a mean crystallite size of less than 10nm and wherein the lower layer has a coercive force of less than 0.7kA/m (or 0.3 kA/m, as recited in claim 7).

Thc prior art fails to teach or render obvious a magnetic recording mediumcomprising a lower binder-containing layer containing an isotropically magnetic soft pigment selected from γ-Fe_2O_3, Fe_3O_4 or a solid solution thereof, having a mean crystallite size of less than 10nm and wherein the lower layer has a coercive force of less than 0.7kA/m (or 0.3 kA/m, as recited in claim 7).

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheeba Ahmed whose telephone number is (571)272-1504. The examiner can normally be reached on Mondays and Thursdays from 8am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached at (571)272-1514. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)306-5665.

Sheeba Ahmed
Art unit 1773
January 25, 2004